

forming a titanium layer on the nickel-vanadium layer;

selectively forming a gold bump on the titanium layer at a location corresponding to the aluminum contact pad; and

etching the aluminum layer, the nickel-vanadium layer and the titanium layer using the gold bump as a mask wherein the gold bump is substantially unaffected during the etching step.

2. (Amended) The method as claimed in claim 1, further comprising, before the gold bump is formed on the titanium layer, the step of removing TiO or TiO₂ that may have been formed on the titanium layer.

3. (Amended) The method as claimed in claim 2, wherein the removing step is conducted by treating the titanium layer with a cleaning medium.

Please add new claims as follows:

--7. The method as claimed in claim 1, wherein said etching comprises utilizing an acidic solution as an etchant to etch the aluminum layer, the nickel-vanadium layer and the titanium layer without significantly affecting the gold bump being used as an etching mask.

8. The method as claimed in claim 1, wherein said etching comprises utilizing HCl as an etchant to etch the aluminum layer, the nickel-vanadium layer and the titanium layer.

9. The method as claimed in claim 3, wherein the removing step is conducted without completely removing an entire thickness of said titanium layer.

10. A method of forming a semiconductor device having a bump electrode, the method comprising the steps of:

providing an aluminum contact pad on a substrate, at least a portion of the aluminum contact pad being exposed through a dielectric layer on the substrate;

depositing an aluminum layer on the dielectric layer and the exposed portion of the aluminum contact pad;

depositing a nickel-vanadium layer on the aluminum layer;

depositing a titanium layer on the nickel-vanadium layer;

selectively forming a gold bump on the titanium layer at a location corresponding to the aluminum contact pad, wherein the gold bump is in direct physical contact with titanium of the titanium layer to ensure good adhesion between the gold bump and titanium of the titanium layer; and

etching the aluminum layer, the nickel-vanadium layer and the titanium layer using the gold bump as a mask wherein the gold bump is substantially unaffected during the etching step.

11. The method as claimed in claim 10, further comprising, before the gold bump is formed on the titanium layer, the step of removing TiO or TiO_2 that may have been formed on the titanium layer.
